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ABSTRACT

THIS STATE-OF-THE ART PAPER SUMMARIZES THE HISTORY OF MICROTEACHING'S DEVELCPMENT AND ITS RATIONALE, THE MANY USES OF MICROTEACHING, AND THE RESEARCH EVIDENCE ON MICROTEACHING--A TRAINING PROCEDURE WHICH HAS BECOME AN ESTABLISHED ELEMENT IN THE PROGRAMS OF MANY COLLEGES, UNIVERSITIES, AND SCHOOL DISTRICTS IN THE EDUCATION OF VARIOUS GROUPS OF EDUCATIONAL PERSCNNEL, E.G., PRESERVICE TEACHERS, INSERVICE TEACHERS, COUNSELCRS, SUPERVISORS, AND COLLEGE TEACHERS. ALTHOUGH THE AUTHORS MAKE THE DISTINCTION BETWEEN MICROTEACHING (A TEACHING SITUATION SCALED DOWN IN TERMS OF TIME, NUMBERS OF STUDENTS, NUMBER AND SPECIFICITY OF TEACHING SKILLS FOCUSED ON, AND OFFERING THE OPPORTUNITY FOR IMMEDIATE FEEDBACK IN SOME FORM) AND SIMULATION (WHICH USES THE SAME PROCESS AND THE SAME TEACH-CRITIQUE/RETEACH-CRITIQUE CYCLE, BUT WHICH, UNLIKE MICROTEACHING, INVOLVES PEER-GROUP STUDENTS, RATHER THAN "REAL" ONES), THEY RECOGNIZE THAT THE LATTER IS BY FAR THE MORE COMMON PRACTICE IN PRESERVICE EDUCATION. EMPHASIS OF THE RESEARCH SUMMARY IS ON EMPIRICALLY BASED, RATHER THAN EXPERIENTIALLY BASED, STUDIES OF BEHAVIORAL CHANGE AND CN AREAS RELATED TO BOTH TEACHING SKILLS AND TRAINING PROTOCOLS IN WHICH A GREAT DEAL OF FURTHER RESEARCH IS NEEDED. INCLUDED WITH THE DCCUMENT IS A LIST AND EXPLANATION OF 15 SPECIFIC TEACHING SKILLS AND AN ANNOTATED BIBLIOGRAPHY. (JES)

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Brief Title:

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Cooper
Allen

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MICROTEACHING: HISTORY AND PRESENT STATUS

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Preface

This state-of-the-art paper and it accompanying bibliography are on the topic of microteaching. The authors, James M. Cooper and Dwight W. Allen, have done extensive research and writing in this area for teacher education, and the Clearinghouse is pleased that they have contributed their expertise to the ERIC system.

The topic of microteaching is in a high priority area for information identified by the Clearinghouse's Advisory and Policy Council.

This paper is a valuable source of information for those interested in microteaching and should help readers in their continuing efforts to keep abreast of this important topic.

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Teacher Education and ERIC

The ERIC Clearinghouse on Teacher Education, established June 20, 1968, is sponsored by three professional groups--the American Association of Colleges for Teacher Education (fiscal agent); the National Commission on Teacher Education and Professional Standards of the National Education Association (NEA); and the Association for Student Teaching, a national affiliate of NEA. It is located at One Dupont Circle, Washington, D.C. 20036.

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Users of this guide are encouraged to send to the ERIC Clearinghouse on Teacher Education documents related to its scope, a statement of which follows:

> *The Clearinghouse is responsible for research reports, curriculum descriptions, theoretical papers, addresses, and other materials relative to the preparation of school personnel (nursery, elementary, secondary, and supporting school personnel); the preparation and development of teacher educators; and the profession of teaching. The scope includes recruitment, selection, lifelong personal and professional development, and teacher placement as well as the profession of teaching. While the major interest of the Clearinghouse is professional preparation and practice in America, it also is interested in international aspects of the field.*

The scope also guides the Clearinghouse's Advisory and Policy Council and staff in decision-making relative to the commissioning of monographs, bibliographies, and directories. The scope is a flexible guide in the idea and information needs of those concerned with pre- and inservice preparation of school personnel and the profession of teaching.

Microteaching: History and Present Status

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Since its inception in 1963, microteaching has become an established teacher-training procedure in many colleges, universities, and school districts. James A. Johnson of Northern Illinois University, in a national survey of student-teaching programs, cites figures which indicate that 44 percent of all teacher education programs use some form of microteaching.[1] Despite its apparent widespread usage, microteaching is still considered an innovation in teacher education as evidenced by the introductory presentations on microteaching that appeared at the 1969 national conventions of the American Educational Research Association, the American Association of Colleges for Teacher Education, the Association for Supervision and Curriculum Development, and the National Catholic Education Association. Like other educational innovations, microteaching has frequently been implemented without regard to the existence of research evidence which validates its use.

The purpose of this paper is therefore to present the history of microteaching's development and its rationale, to summarize the many uses of microteaching, and to summarize the research evidence on microteaching.

MICROTEACHING DEFINED

Defined most succinctly, microteaching is a teaching situation which is scaled down in terms of time and numbers of students. Usually, this has meant a four- to twenty-minute lesson involving 3 to 10 students. The lesson is scaled down to reduce some of the complexities of the teaching act, thus allowing the teacher to focus on selected aspects of teaching. Frequently, one microteaching episode includes teaching a lesson and immediate feedback on the teacher's effectiveness. This feedback may come from video- or audiotape recordings, supervisors, pupils, colleagues, or from the teacher's self-perceptions. Some of the variable aspects of microteaching include lesson length, number of reteaches, the amount and kind of supervision, the use of video- or audiotape recordings, and number and types of pupils.

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[1]Johnson, James A. "A National Survey of Student Teaching Programs." Doctor's thesis. De Kalb, Ill.: Northern Illinois University, July 1968. p. 56. (Unpublished.)

Microteaching is not synonymous with simulated teaching. Rather, the teacher is a real teacher, the students are real students, and learning does occur in the short lessons. Many reports of microteaching programs describe the students as peers, that is, fellow student teachers. The authors of this paper do not consider this to be microteaching. In many cases, the peers are usually role playing; they are acting as they think secondary or elementary school students would behave. Even if they are not role playing, but behaving naturally, they are still not part of the population the student teachers are preparing to teach. While peer teaching can be a very valuable experience, the authors believe it should not be equated with microteaching, in which the students are "real."

HISTORY

Although a simple idea, microteaching was late arriving on the educational scene. It developed at Stanford University in 1963 from an attempt to find a new, more effective initial training of pre-intern teachers. The original efforts had produced the demonstration lesson, where the interns were asked to teach a game to a group of four students. These students were role playing stereotyped students: slowpoke, couldn't-care-less, eager, and know-it-all. The situation was rigged to provide the interns with a lesson in humility designed to impress upon them the need to learn instructional techniques.

From this extremely artificial situation developed the concept of microteaching. Instead of having the students role play, they were asked to prepare a short lesson of their own choosing in their subject matter area. Although this procedure was deemed by the Stanford Secondary Education Project staff as an improvement over the demonstration lesson, it still seemed to lack direction. What was missing was the teaching techniques dimension. In the summer of 1963, Horace Aubertine developed the technical teaching skill "How To Begin a Lesson" as part of a research study (Allen and Ryan, 1969). The interns were instructed to use this skill in their microteaching lessons. As a result of this experience, the practice of focusing on one skill at a time evolved and proved to be quite successful. It was decided that for future microteaching clinics, additional teaching skills would be developed.

These teaching skills refer to specific teacher behaviors designed to influence learners in a predetermined direction (Johnson, William D., 1967). This required that both teacher and learner behaviors be operationally defined and that the desired interactions be derived from a theoretical rationale.

The teaching skills approach is based on the assumption that by breaking down the complex teaching act into more easily learned skills, the teacher can gradually acquire a repertoire of teaching skills to use

in the actual classroom. By building a repertoire of skills the teacher is increasing his flexibility and versatility. He has more teaching techniques at his command in order to vary his questions, reinforcement, or presentation styles. Thus, he is able to adapt his teaching style to suit the students' needs or the objectives of the lesson. There is research evidence which indicates that the flexible teacher, the one who can adapt his teaching methods, is a more effective teacher in producing positive student performance and attitude than a teacher who lacks this versatility.[2]

The most widespread use of microteaching, therefore, has focused on the teacher's development of a repertoire of teaching skills. Since 1963, over twenty different general teaching skills applicable to elementary and secondary teachers across most subject matter areas have been developed. Most of these skills were identified through an informal task analysis of teachers in their classrooms. Once the skill was identified, its behavioral components were isolated and training protocols were developed using a microteaching format. A partial list and description of these skills can be found in the Appendix.

RATIONALE

The rationale for microteaching as a teacher-training technique has been set forth by several authors:

1. The fact that microteaching is <u>real teaching</u>, albeit constructed in the sense that teacher and students work together in a practice situation, is a point made by several authors (Allen and Ryan, 1969; Allen and Clark, 1967).

2. Microteaching <u>reduces the complexities</u> of normal classroom teaching, thus allowing the teacher to concentrate on the acquisition of a teaching skill (Cooper, 1967; Allen and Ryan, 1969; Bush, 1966).

3. <u>Knowledge and information about performance aids</u> the learner (in this case the teacher) in his acquisition of a teaching skill. The immediate feedback from videotape recorders, supervisors, pupils, and colleagues provide a critique of the lesson which will help the teacher constructively modify his behavior (Meier, Summer 1968).

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[2]Hamachek, Donald. "Characteristics of Good Teachers and Implications for Teacher Education." <u>Phi Delta Kappan</u>, February 1969. p. 343.

4. Microteaching considers the trainee's capacities by allowing him to select the content of the lesson from the area of his greatest competence (Meier, Summer 1968).

5. Microteaching provides a setting in which the trainee can teach students of varying backgrounds, intellectual abilities, and age groups before facing a class during his student or intern teaching (Allen and Clark, 1967).

6. Microteaching permits greater control over the trainees' environment with regard to students, methods of feedback, supervision, and many other manipulatable variables (Allen and Ryan, 1969).

7. Microteaching provides a low threat situation in which to practice teaching skills, a situation which should be more conducive to learning than the high anxiety level exhibited by many beginning teachers when practicing in actual classrooms (Allen and Clark, 1967).

8. Microteaching is a low risk situation for both teacher and pupils. Microteaching is not part of the pupils' regular curriculum, therefore their learning is not endangered. Similarly, the teacher need not fear failure for precisely the same reason (Allen and Clark, 1967).

9. Since active participation by the trainee is preferred, and meaningful materials and tasks are desirable for optimal learning to occur, the microteaching setting allows the student to perfect certain skills that he will subsequently be expected to perform in the regular classroom (Meier, Summer 1968).

10. Microteaching allows for the repetitive practice necessary to overlearn skills which will be used during regular teaching (Meier, Summer 1968).

11. Microteaching incorporates spaced or distributed practice of a skill over a period of time, allowing for the neurophysiological consolidation of the new data for long-term storage and retrieval (Meier, Summer 1968).

None of the cited authors looks upon microteaching as a panacea for the ills of teacher education. For example, the problems of classroom control and discipline have yet to be successfully solved within a microteaching format. But the authors are virtually unanimous in their praise of microteaching as a technique for training teachers to use some basic teaching skills (Meier, Summer 1968; Allen and Ryan, 1969; Kallenbach, 1966; Bush, 1966; Fortune, 1967).

USES OF MICROTEACHING

Preservice Training

Microteaching's primary use to date has been for preservice training of student or intern teachers. This was the original purpose of microteaching as it developed at Stanford University. Using the microteaching format, the preservice training has primarily focused on the acquisition of teaching skills.

The usual format at the preservice level has been for the trainee to first receive instruction in the particular skill to be practiced. This instruction may be written, oral, videotaped, or filmed. A number of institutions use a combination of these methods (Ward, 1969). After the skill is explained, the trainees often will see a videotaped or filmed model of a teacher demonstrating that skill. This model will be discussed until the trainees are clear as to the skill they will be practicing in microteaching. Ward found that the skills most often used were asking questions, using reinforcement techniques, establishing set, using examples, and varying the stimulus.

The trainee then teaches a short lesson, usually five to ten minutes, in his own subject field and of his own choosing, to a small number of students, while trying to master the skill. Whenever possible, the lesson is video- or audiotaped to allow the trainee to observe and/or hear himself. There is usually a supervisor present who helps the trainee analyze the strengths and weaknesses of the lesson and discusses how the lesson might be improved. Frequently, colleagues or other trainees will observe one another teaching and offer their comments on the lesson. A number of programs also utilize student feedback to help the teacher in a critique of the lesson.

One hundred and twenty-five institutions use the videotape recorder in microteaching for secondary school teachers (Ward, 1969). Although videotape equipment is not necessary for microteaching, it does add tremendous power to the feedback dimension.

After the critique, the trainee usually has a break period in which he replans the lesson in order to incorporate the suggestions from the critique. Although there is no solid research evidence regarding the optimal length of time for planning, there is some evidence that 15 minutes or less is not long enough (Microteaching: A Description, 1966).

Once the teacher has replanned the lesson, he teaches it again to a different group of students in order to get initial responses from the students. Ninety-nine institutions out of 136 replying to Ward's survey questionnaire indicated that they either always or sometimes used the teach-reteach cycle. After the reteach lesson, the same sources of feedback are used again in the critique.

This cycle can be repeated as often as desired while the trainee continues to develop a particular skill. Usually, however, after one teach-critique/reteach-critique cycle, the trainee will plan new content while continuing to practice the same skill.

One interesting point should be noted. Despite the authors' prejudice against using peers as students, 111 institutions indicated that they did use peers instead of actual pupils (Ward, 1969). Probably the main reason for using peers is the difficulty encountered in obtaining actual pupils. These pupils are in school all day and therefore usually are available for microteaching only in the evening. This is especially true if the microteaching is conducted at a college or university rather than at the public schools, and the university is by far the most common locale for microteaching (Ward, 1969). If the program operates during the summer, actual students can be paid for their services, but many institutions find the cost restrictive. As a consequence, the utilization of peers as students, at least at the secondary level, far outnumbers the use of actual students for the microteaching process at the preservice level.

In addition to the format just described, another format that has been used is a 20-25 minute lesson, followed by a 30-40 minute critique. This training protocol was used at Stanford, following three weeks of the teach-critique/reteach-critique format. There were several reasons for changing the pattern. By lengthening the time of the lesson, the trainee was able to start planning and teaching lessons which were closer in length to the lessons he would teach in the regular classroom. This longer format ran for three weeks, during which time the trainees were divided into teams of three or four. These teams then planned a three-week unit to teach to a single group of students. The team members selected the objectives, organized the learning experiences, and decided how they would evaluate the lesson. This process gave them experience in team planning, team teaching, and the construction of a teaching unit, and an opportunity to work with a single group of students over an extended period of time. Although each of the trainees was working on a particular skill during this three-week period, the major concern during the critique sessions was less with the skill than the appropriateness of objectives and techniques, organization, and student involvement. No formal evaluation was ever made to compare the effectiveness of the two microteaching formats described, but the general feeling of the trainees and the supervisors at Stanford was that the shorter lesson was more effective for some skills, such as silence and nonverbal communication, while the longer lesson was more effective for skills such as set induction and closure.

In-Service Training

Although microteaching's greatest use has been at the preservice level, increasing interest in this technique is being generated at the in-service level. Several uses of microteaching for in-service teachers have been suggested (Allen, 1966).

These include microteaching:

1. As a trial framework for team presentation.

2. As a site for ascertaining the proper instructional level of materials.

3. For preemployment prediction.

4. To train supervisors to evaluate beginning teachers.

One example of microteaching's in-service use is provided by the Jefferson County, Colorado, extended summer program (Meier, Summer 1966). This program was designed to upgrade the entire instructional program in the school district by providing in-service training opportunities in team teaching and flexible scheduling. Each teaching team used microteaching to perfect curriculum before trying it before a whole class, and the videotape of the micro-lesson was viewed by the team to evaluate its teaching. By the summer's end more than one hundred competent teachers had experienced microteaching, along with several hundred children who had participated in an enriching experience. Meier reports that the school system has benefited enormously from this massive in-service training program and has since introduced many of its validated innovations into the regular school-year program.

Meier also reports on another in-service program conducted under the auspices of the National Defense Education Act, Title XI, by the Child Study Institute at Colorado State College (Meier, Summer 1968, and November 1968). One hundred teachers in early childhood education programs throughout the country received training in how to manage new programs for preschool and beginning school children. This in-service program was conducted by means of filmed learning episodes, videotaped recordings of the teachers' efforts to recreate the learning episodes in their own locations, and supervision provided by personnel located at the Child Study Institute in Greeley. This long-distance microteaching was conducted in the following manner. After watching the filmed learning episodes and reading the accompanying written materials, each teacher tried to achieve the objectives of the episode through a microteaching process. After practicing several times, the teacher mailed a representative videotape of his efforts to the Child Study Institute, where a team critique was made, an evaluation given, and the recording and evaluation mailed back to the teacher. When the teacher was satisfied that he had achieved the objectives of the episode, a new unit was sent to him. Upon completion of the course, the participating teachers received college credit from Colorado State College. The effectiveness of the training program was assessed by determining the teachers' attitudes and opinions about the method of training and by observing changes in the teachers'

cognitive and affective behavior through analysis of the microteaching critique instruments. The trainees showed growth on both the cognitive and attitude tests which were administered at the beginning and end of the program.

Probably the most comprehensive development of microteaching for in-service training is that being conducted by the Far West Laboratory for Educational Research and Development. Its "minicourse" model utilizes instructional films, handbooks, evaluation forms, a micro-teaching format, and videotaped recordings of teachers' lessons. The minicourse is discussed in more detail on page 15.

Another in-service project combined microteaching and interaction analysis for teachers in El Dorado County, California (Minnis, 1968). Twenty-eight experienced teachers were enrolled in a university extension course which had cognitive process in science as a focus. After receiving training in interaction analysis and new teaching strategies in science, each strategy was translated into a teaching pattern which was practiced in a microteaching setting. Significant differences ($p < .01$) in pretest and posttest percentile scores on the MTAI for the participating teachers and feedback from building principals confirmed that the participating teachers continued to try new teaching behaviors in the classroom and retained a positive attitude toward the microteaching-interaction analysis combination.

The General Learning Corporation has attempted to overcome one of the major drawbacks preventing successful in-service microteaching. This has been the lack of written materials describing skills and accompanying filmed models of teachers demonstrating those skills. Without a high level of expertise available, most school districts were unable to generate a successful microteaching program. The publication of Teaching Skills for Elementary and Secondary School Teachers (Allen and others, 1969) has made detailed skills descriptions and accompanying filmed models available to school districts and colleges for both in-service and preservice training.

Although microteaching's usage has been greater at the preservice level, its popularity as an in-service training procedure seems to be increasing. Ward (1969) reports that there are 53 colleges and universities that have contributed directly to the use of microteaching techniques for in-service education in their respective states. In addition to this number, there are probably school districts using microteaching without consultation with a college. As more and more school districts concern themselves with increasing the teaching skills of their experienced teachers, microteaching will continue to grow in popularity as an in-service training procedure.

Peace Corps Training

A large number of Peace Corps volunteers are trained to be teachers.

Since the normal tour of duty is only two years, a condensed teacher-training program is essential in order to utilize the volunteers' time effectively. It was only natural that the efficiency of microteaching as a teacher-training procedure be explored. Microteaching became a major component in the volunteers' training in at least two Peace Corps centers.

The first center was located at Stanford University and was the site for training 49 volunteers for assignments in The Philippines. The microteaching clinic had three objectives: to teach the volunteers skills related to the teaching of English as a second language; to acquaint them with special materials for teaching English as a second language; and to provide a reality test during which the volunteers could decide if they really wanted to become elementary school teachers in The Philippines for the next two years (Allen and Eve, 1968). Using Filipino students who had been in the United States for less than six months, the microteaching experience provided contact with students who spoke little or no English, thus representing a good test of the trainees' ability to communicate with native children. Beginning with a five-minute, four-pupil format, the trainees moved to larger classes, longer lessons, more demanding subject matter, and finally complex interpersonal situations in which to make teaching decisions.

A second case of using microteaching for Peace Corps training involved a group of 330 volunteers going to Micronesia (Allen and Ryan, 1969). Using an abandoned bathhouse which was being renovated during the microteaching, and Cuban refugee children who spoke little English, the clinic concentrated on preparing TESL (Teaching English as a Second Language) teachers. The clinic format was basically a 5-10 minute lesson, with a 10-minute critique involving two trainees and the supervisor. There were no videotape recorders. Different techniques for getting across the same sentence structure, aspects of the lesson that might have been confusing to the students, and similar techniques and problems were discussed. Since the children were not changed, the reteach lessons were extensions of the first lessons. A survey indicated that 97 percent of the trainees felt microteaching was valuable or extremely valuable in their preparation for teaching. Over 95 percent recommended microteaching experience for future trainees.

Microcounseling

A fruitful adaptation of microteaching has occurred recently in counselor education. While at Colorado State College, Allen Ivey and his colleagues developed "microcounseling," a process whereby trainees systematically practice basic component skills of counseling (Ivey and others, 1968). Thus far, three controlled research studies involving microcounseling have been conducted. The three skills that have been identified are attending behavior, Rogerian reflection of feeling, and summarization of feeling.

The first, attending behavior, is considered by Ivey to be one of the basic counseling skills. He defines the skill as attending or listening to a client both verbally and nonverbally. The skill is behaviorally defined as establishing eye contact with the client; communicating attentiveness through gestures, movements, and posture positions; and demonstrating verbal attention by responding to the client's last comment without introducing new data.

The second, reflection of feeling, is also considered a key counseling skill. Communication of warmth and genuineness are the essential dimensions of this skill. Microcounseling treats reflection of feeling as a type of attending behavior in which the counselor selectively attends to one certain aspect of his interaction with the client.

The third, summarization of feeling, is an extension of the first two skills in that the counselor is attending to a broader class of stimuli and must bring seemingly diverse elements into a meaningful whole. This is achieved when the counselor can summarize the client's comments and relate them to a central theme or emotion.

In each of the three studies, the counselor trainees using microteaching significantly improved their ability to perform the skills. Ivey summarizes the implications and future of his work as follows:

> Most counselor-educators have spent long hours training beginners in the skills of counseling, and most would agree that training neophyte counselors in these skills is a difficult and taxing task. Microcounseling training seems to provide a framework to make professional counselor training and the training of lay counselors more meaningful and effective. Further, this type of training may be equally important to the teacher, the administrator and the student. The microteaching and microcounseling framework may be the means by which the developmental skills of living may be taught. (Allen and Ryan, 1969)

Supervisor Training

While the microteaching format developed as a teacher-training technique, it also has great utility for the training of supervisors. Aubertine (1967) reports the following areas of investigation conducted at the microteaching clinic at Whitman College, Walla Walla, Washington.

1. Would the continuity in the teacher-training process be improved if the supervising teachers were trained in supervision procedures, applied them in microteaching sessions, and then evaluated the outcomes?

2. Which areas in the training of clinical supervisors would be most appropriate for the use of microteaching?

3. What effects would the training of clinical supervisors have in increasing interest in the use of microteaching as part of an in-service training program for teachers?

As a result of the supervisors' training during the clinic, Aubertine concluded that microteaching was worthwhile in the development of:

1. Adroitness in utilizing conceptual models and in analyzing the teaching process with new insights into the instructional act.

2. Sophistication in interpreting high school pupil behavior.

3. Dexterity in selecting and synthesizing relevant aspects of a lesson.

4. Expertise in devising and asking probing questions of the student teacher in order to aid him to analyze his instruction and create alternatives in it.

5. Facility in human relations, especially in creating rapport with the student teacher by way of increased sensitivity to his problems.

6. Capacity to instill and build confidence within the student teacher.

Although interest in some form of in-service microteaching was generated, for a variety of reasons plans were still in an exploratory stage. Aubertine goes on to strongly recommend the use of videotape recorders as a means of increasing supervisory effectiveness in observation and assessment of instruction.

Training College Teachers

Microteaching has also been used for improving college teaching. In the spring of 1967, a three-day workshop was conducted for college teachers at Vanderbilt University, under the auspices of the American Society for Engineering Education. Participants in the workshop came from Tennessee A & I State University, North Carolina A & I, Tuskegee Institute, Southern University, and Prairie View A & M College (Allen and Ryan, 1967). The microteaching clinic was conducted by James M. Cooper and David B. Young, then doctoral students at Stanford University, as part of the three-day workshop. Each participant taught a 10-minute diagnostic lesson which he had previously prepared. The lesson was videotaped and a 20-minute critique followed, using student (college engineering students) and supervisory feedback. During the critique, the skill of varying the stimulus was introduced, both orally and in written form. The behavior to be practiced was clarified, and the college teachers had a half-hour break

to prepare for the reteach. The reteach lesson followed, and again was videotaped and analyzed in terms of the teacher's use of the skill.

A survey of the 20 participants revealed the microteaching experience to be a unanimous success. Although many were originally apprehensive about participating, all agreed it was a helpful experience and recommended microteaching experiences for other teachers.

Another report of microteaching for college teachers comes from Arye Perlberg at the University of Illinois (Perlberg and O'Bryant, 1968; Perlberg, Tinkham, and Nelson, 1968). In general, Perlberg found the use of microteaching and videotape recorders very helpful in assisting college teachers to analyze their teaching.

EVIDENCE REGARDING MICROTEACHING'S EFFECTIVENESS

A large majority of the articles reviewed for this paper are experientially based studies rather than empirical studies. However, some which present research evidence regarding behavioral change will be described.

One of the better research studies was performed by Camille G. Bell at Texas Technological College with home economics teacher trainees (Bell, 1968). Using a control group which engaged in student teaching without microteaching and an experimental group which participated in microteaching after their student teaching, Bell tested six null hypotheses:

1. There is no significant gain in the teaching performance of student teachers in the experimental group who were trained in certain teaching techniques by microteaching after their student teaching experience in various schools. (Rejected at the .01 level of significance.)

2. There is no significant gain in teaching performance of student teachers in the control group whose teaching was recorded on videotape before and after their student teaching experience in various schools. (Accepted.)

3. There is no significant difference in teaching performance of the student teachers in the experimental group on their first microteaching lesson and the teaching performance of the student teachers in the control group on their final microteaching lesson. (Accepted.)

4. There is no significant relationship between certain demographic variables--age, socioeconomic status, father's education, G.P.A. of student teachers of both groups--and the improvement in microteaching performance as evaluated by judges. (Accepted.)

5. There is no significant reliability of the evaluations of the judges. (Coefficient reliability of all raters, .89.)

6. There is no significant difference in the training performance on the final lessons of the control and of the experimental groups. (Rejected at least at the 01 level of significance.)

The main conclusion drawn by Bell was that the addition of microteaching to the program of preparing student teachers is "a relatively more powerful treatment in contributing to gains in teaching effectiveness than the usual form of preparation provided by pre-service and student teaching experience" (Bell, 1968).

In another study conducted at Stanford University in the summer of 1963, more than sixty teacher education candidates in the Secondary Education Program were randomly divided into two equal groups, half given the standard observation and teacher aide experience, and the other half concentrated training in the microteaching clinic (Bush, 1966). Findings of that experimentation were:

1. The microteaching group performed at a higher level of teacher competence than the traditionally prepared group.

2. Performance in the microteaching situation predicted subsequent classroom performance.

3. There was a significant increase in the accuracy of candidates' self-perception of teaching performance.

4. Candidates receiving student appraisal of their effectiveness improved significantly more than candidates not having access to such feedback.

5. Trainees' acceptance of microteaching's value was high.

6. Three skills subjected to experimental treatment in microteaching produced significant changes in the trainees' performance.

Reporting on the Stanford Summer Microteaching Clinic in 1965, Fortune, Cooper, and Allen (1967) stated that significant teacher behavior changes occurred over the six-week period. Nine of the first 12 items on the Stanford Teacher Competence Appraisal Guide showed significant ($p < .01$) mean gain. This mean gain is indicative of substantial intern improvement in the items showing change.

A questionnaire designed to evaluate trainee acceptance of microteaching indicated that less than 15 percent of the interns reported

that the experience was of little or no value, while more than 60 percent of the interns returning the questionnaire felt it to be either very or extremely valuable.

With reference to the 1966 Stanford Microteaching Clinic, Cooper and Stroud (in Microteaching: A Description, 1966) found results which suggest that perhaps one teach-reteach cycle is not enough to obtain significant behavior change when the time interval between lessons is only 15 minutes. In this clinic, specific instruments for evaluating the teaching skills were used rather than the more global Stanford Teacher Competence Appraisal Guide. Cooper and Stroud speculate that these instruments probably have more face validity, but validity and reliability of the instruments were not established.

Reporting on a series of empirical studies on teaching skills and microteaching for the Stanford Center for Research and Development in Teaching, Berliner (1969) summarized the major conclusions. First, contrary to most generalizations which are made about the relationship of time delay and feedback for the modification of behavior, a series of experiments indicated that immediacy of the feedback (using videotapes and supervisors) is not crucial to the acquisition of some behavior. He reports that McDonald and Allen explain this result in the following way:

> The explanation for this may be that the videotape playback reinstates the trainee's performance for him. The whole experience of viewing oneself on the videotape is quite different from receiving information from a second person about one's performance. The character of the feedback experience has changed drastically. Whatever factors might be involved in this new experience are sufficiently different so that the factor of immediacy is no longer relevant. (Berliner, 1969)

Second, a feedback system in which a trainee views his own behavior, with a supervisor commenting on the behavior, is a very effective technique for modifying some teaching behaviors. This conclusion was formed as a result of experiments investigating reinforcement techniques and probing questioning. The crucial aspect of the supervisor's role is when he identifies the salient behaviors being shown on the videotape recording and reinforces both the model's and trainee's use of these behaviors.

Third, when a videotaped model performance demonstrates positive instances of the desired behavior, rather than a mixture of both positive and negative, the trainee's ability to acquire the skill in a transfer task is enhanced.

Fourth, the findings about the effectiveness of perceptual modeling (a videotape or film of a teacher demonstrating certain behaviors) are inconsistent. There is evidence that for some skills, particularly those most easily described, symbolic written descriptions of the skill will suffice. Berliner recommends th , until such time as a taxonomy outlines a classification that will provide information on which skills should be perceptually modeled and which should not, videotaped models as well as written descriptions of the skills should be used.

Fifth, and probably most important, the series of experiments indicates that teaching behaviors can be described behaviorally. This means that there is a science to teaching as well as an art of teaching.

For more information on this series of experiments investigating technical skills of teaching, modeling behavior, and microteaching, the reader should consult Berliner (1969) and McDonald and Allen (1967).

Basing its original approach on the technical skills developed at the Stanford Center for Research and Development in Teaching, the Far West Laboratory for Educational Research and Development has developed an in-service training program called the "minicourse." The minicourse is defined as a product containing instructional films, handbooks, and evaluation forms; the process of microteaching; and an organization of product and process known as the instructional sequence (Langer, 1969). Using behaviorally stated outcomes and a systematic approach, the minicourse attempts to bring about teacher behavior change without the use of a supervisor.

Minicourse One, designed to increase the teacher's effective use of classroom questions for discussion purposes, has as some of its behavioral outcomes a decrease in the number of times the teacher answered his own question, an increase in the length of pupil's response in words, a decrease in the proportion of teacher talk, and an increase in the proportion of higher cognitive questions. The following excerpts are selected from data presented by Borg (1969).

Behavior	Mean Score Before Minicourse	Mean Score Immediately After	Mean Score Four Months After
Answering Own Question	4.47	.71	.73
Length of Pupil Response in Words	5.70	11.55	12.46
Proportion of Teacher Talk	53.18	29.44	30.20
Proportion of Higher Cognitive Questions	26.16	52.27	48.58

All the preceding data represent significant pre- and postscore differences, while there was no significant drop in performance after four months. The early results of the minicourse data indicate a highly significant and effective training procedure for teacher behavior modification.

In an experimental training program with preservice elementary school teachers at The University of Connecticut, using microteaching and videotape recorders, Goodkind (1968) found that the experimental group of student teachers displayed a greater awareness of specific personal habits and mannerisms; a greater awareness and use of specific teaching acts and techniques, particularly of the nonverbal type; greater insight into the activity and interrelationships of children within the classroom; and a greater awareness of the problems of structuring and pacing in their educational program.

Another study with elementary school student teachers was conducted at San Jose State College in the summer of 1966 (Kallenbach and Gall). The purpose of the study was to determine the effectiveness of elementary school interns trained in a summer program by a microteaching approach as compared with interns who received conventional classroom observation and student-teaching experience. Contrary to the results reported by Bush at Stanford, the microteaching approach was not found to result in significantly higher ratings of teacher effectiveness either immediately after or a year after training. However, it was concluded that microteaching is an effective training strategy since it achieved results similar to those of conventional training methods, but in only one-fifth the time and with fewer administrative problems. An incidental finding was that pretraining ratings of teaching performance based on a brief videotaped lesson were generally good predictors of later ratings of teacher effectiveness.

One very interesting experiment involving the use of microteaching as a laboratory experience for an educational psychology course was conducted at Purdue University (Van Mondfrans and others, 1969). The purpose of the study was to assess what effect microteaching experiences in an educational psychology course would have on student perceptions regarding the relevance of educational psychology to teaching. Using four control groups and one experimental group which was instructed in teaching skills developed at Stanford, data was drawn from four sources: scores in multiple-choice exams; scores from five narrative papers; responses to the Purdue Rating Scale for Instruction; and a short questionnaire evaluating the discussion sections.

The investigators found that the scores on unit tests indicated no significant differences between the experimental group which practiced microteaching and the control groups which met with discussion leaders

to discuss papers, test readings, and unit tests. Thus, the microteaching group performed as well in content knowledge of educational psychology as the control groups which spent extra time discussing course-related materials.

When the participants were asked to rate various characteristics of the course instructor and the course in general, the microteaching group rated the instructor poorer than at least two of the control groups on 10 out of 11 items. However, they gave higher ratings than the control groups to those course aspects having to do with laboratory facilities, how well the course was meeting their ultimate and immediate goals, and the presentation of subject matter (in lectures, recitation, and laboratory). The authors conclude that a microteaching experience focusing on teaching skills is an important adjunct to the educational psychology course. Subjects tend to perceive such an experience as valuable and relevant to their teaching goals.

Another research study using a microteaching format was conducted at the Teaching Laboratory at The University of Texas at Austin (Davis and Smoot, 1969). Using audio recordings and peers instead of actual students, the study was designed to yield direct evidence of differences in undergraduate teacher candidates' verbal teaching behaviors associated with their participation in the Teaching Laboratory. The experimental group taught a lesson, received pupil, instructor, and audiotaped feedback, and taught a reteach lesson. The control group read and discussed issues but had no direct experience in teaching. Preceding and following the training sessions, pretest and posttest lessons were taught. Using a modified version of OScAR 5V called Laboratory Observation Schedule and Record (LOScAR), statistically significant differences between the groups were obtained for 17 of 22 variables, indicating that verbal teaching behaviors can be clearly modified using a microteaching format.

SUMMARY OF RESEARCH

It is extremely difficult to summarize research findings with different objectives, subjects, conditions, and other variables. However, some generalizations about microteaching and the teaching skills approach can be made.

1. Using a microteaching format, teach-critique/reteach-critique, positive changes in teacher behavior can be achieved which result in a larger repertoire of teaching behaviors.

2. Performance in a microteaching situation can accurately predict subsequent classroom performance.

3. Trainee acceptance of microteaching as a relevant training procedure is high.

4. The feedback dimension of microteaching is probably the crucial one in terms of changing the trainee's behavior.

5. This feedback can come from several sources, but the most powerful combination seems to be one that utilizes supervisory comments, videotape recordings, and pupil comments.

6. Contrary to previous research evidence, the immediacy of feedback (using videotapes and supervisors) is not crucial to the acquisition of some behaviors.

7. A perceptual model that demonstrates positive instances of the desired behavior, rather than a mixture of both positive and negative, is more powerful in enhancing the trainee's ability to acquire the skill in a transfer task.

8. For certain skills, a perceptual model is preferred over a written description of the skill, while for other skills the evidence is inconclusive.

NEEDED RESEARCH

The needed research on microteaching breaks down into two categories. The first relates to teaching skills and the second to the microteaching process and training protocols. A very good statement of these needs is made by Berliner (1969), whose recommendations are summarized here.

Teaching Skills

Validity. The validity of the teaching skills must be established. We know we can train teachers to acquire certain teaching behaviors, but we presently have very little information regarding how these behaviors affect students. Every skill should undergo multivariate analysis to check different achievement and attitude domains in order to understand the nature of a teaching skill with regard to students. These designs should also search for aptitude-treatment interactions in order to refine the validity statements.

Transfer. An effort must be made to determine the transferability of a skill mastered in a microteaching setting to an actual classroom setting.

Interaction among skills. At the present time, we have no knowledge of the optimal learning sequence for the various skills. In fact, this sequence will probably vary for different individuals with different aptitudes. Is there a positive transfer from one skill to learning another skill? Is there a proactive or retroactive

inhibition effect which would justify different training sequences for different trainees?

Systematic identification of skills. The first teaching skills were identified in a rather haphazard fashion. It is becoming increasingly clear that some systematic methods for identifying skills needs to be developed.

Appropriateness criteria. Although many skills have been identified, we are unable to offer guidelines to trainees regarding the appropriateness and rate of emitting a skill. In order to make decisions about what skills to use and when, the teacher needs to have more data regarding what techniques, in what quantity, can be used under certain conditions with different types of students.

Microteaching Process and Training Protocols

Type of model. We do not have good information with respect to whether a videotaped, transcribed, or live model should be used; or even whether modeling procedures should be used for all skills.

Teach-reteach cycle. The number of times a trainee teaches is usually based on the trainer's best guess. Perhaps the most fruitful approach is training to achieve a prespecified criterion level rather than a set number of teaching experiences.

Length of the teaching lesson. We have no research evidence regarding optimal time lengths of the lessons. Five to ten minutes is the usual standard, but this length should not go unchallenged lest it become an orthodoxy.

Number of students in a lesson. Although four or five students have traditionally been used, any reliance on this number is unwarranted. The number of students should be based upon information regarding the abilities and aptitudes of the students and the teachers and the nature of the particular skill.

Time between teaching lessons. Is 15 minutes between lessons too short? Should the format be a teaching trial a day? These questions can be answered empirically and may be of use in engineering a more effective training program.

Delay between teaching sessions and feedback. As pointed out earlier, delay of feedback does not seem to result in any weakening of training. The limits of this effect along a time delay continuum need to be studied.

Feedback relationships. The Stanford studies have indicated that videotaped and supervisory feedback are powerful, yet we do not know if this feedback must occur on every learning trial. In addition, the minicourse studies indicate that trainees seem to do well without live supervision. Whether this is because of the clarity of the written instructions or because the trainees are experienced professionals is not known.

Number of skills to be practiced per training session. Most of the efforts to date have concentrated on one skill at a time. We do not know if multiple skill training is efficient and feasible.

Review procedures. The long-term retention of most of the skills is unknown. Borg and his colleagues at the Far West Laboratory are getting some data on this matter for certain skills. However, some sort of review or retraining procedure to keep the skills at a high level seems inevitable.

SUMMARY

Breaking down the complex teaching act into simple, easily trainable skills offers much promise for the development of specific teaching skills; however, it is not a cure-all for the problems of teacher education. As has been emphasized in this review, there is much that is not known about training teachers through this method, just as there is much we do not know about training teachers in a more conventional manner. More reliable knowledge about this method of training teachers is needed, and this knowledge can be gained only if institutions using this technique will add their findings to the general fund of knowledge. It is hoped that this review will assist in suggesting areas that need to be explored further.

Appendix: Teaching Skills

1. Fluency in Asking Questions. The emphasis is on the teacher asking as many questions as possible during the lesson. This skill is practiced in order to develop a new teaching pattern in the classroom for the teacher who tends to depend too heavily on the lecture method. Having achieved this goal, emphasis can be placed on higher order or divergent questions.

2. Probing Questions. Probing requires that teachers ask questions that require pupils to go beyond superficial "first-answer" questions. This can be done by asking pupils for more information and/or more meaning; requiring the pupil to rationally justify his response; refocusing the pupil's or class's attention on a related issue; prompting the pupil or giving him hints; and bringing other students into the discussion by getting them to respond to the first student's answer.

3. Higher Order Questions. Higher order questions are defined as questions which cannot be answered from memory or simple sensory description. They call for finding a rule or principle rather than defining one. The critical requirements for a "good" classroom question is that it prompts students to use ideas rather than just remember them. Although some teachers intuitively ask questions of high quality, far too many over-emphasize those that require only the simplest cognitive activity on the part of the students. Procedures have been designed to sensitize beginning teachers to the effects of questioning on their students and to provide practice in forming and using higher order questions.

4. Divergent Questions. These questions are characterized by the fact that there are no "correct" answers. They are usually open-ended questions. They require the students to think creatively, to leave the comfortable confines of the known, and to reach out into the unknown. They ask students to make hypotheses and use their imaginations to reorganize concepts into novel patterns.

5. Reinforcement. An incentive skill used by the teacher to reward students for proper behaviors. The skill focuses on the teacher's use of positive reinforcement to increase student participation in classroom discussions.

6. Recognizing Attending Behavior. A skill designed to sensitize and alert the teacher to what is going on in his classroom by observing the cues his students present. By observing their facial expressions, body postures, activity- or nonactivity-

directed behaviors, and conversations, the teacher can tell a great deal about their interest level and attention span. From these cues the teacher can make judgments about whether to continue the activity, change it, slow down, speed up, or use a different mode of instruction. Recognizing student attending behavior is a prerequisite for almost any kind of classroom instructional or management decision.

7. Silence and Nonverbal Cues. This skill is designed to allow the teacher to control and direct classroom discussions without talking. Nonverbal communication is one of the most neglected means of teacher-student communication, but one of the most powerful. The skill focuses on the controlled use of teacher silence to get students to speak and on techniques of nonverbal communication.

8. Cueing. This skill is designed to give the teacher much more control over the success experience a student has in answering a question or in making a comment. By cueing him ahead of time and through the kinds of cues given, the teacher can greatly increase his chances of making a worthwhile contribution to the class.

9. Set Induction. This skill is concerned with properly preparing students for some upcoming activity. It includes an interesting and/or novel way of introducing the activity and establishing common frames of reference between the teacher and students in order to facilitate communication. It is basically an initiating activity by the teacher.

10. Stimulus Variation. This skill deals with both verbal and nonverbal techniques of stimulating students in order to preclude boredom and apathy in the classroom. It is basically concerned with the teacher varying his behaviors in order to keep the students attentive and alert.

11. Closure. This skill is complimentary to set induction. It consists of teacher activities that will help the students perceive a logical organization of the main ideas and pieces of factual information presented in the lesson. In addition to pulling together the major points and acting as a cognitive link between past knowledge and new knowledge, closure provides the pupil with a needed feeling of achievement.

12. Lecturing. Training in some of the successful techniques of lecturing is the focus for this skill. Delivery techniques, use of audiovisual materials, set induction, pacing, closure, planned repetition, and other skills related to lecturing are included. Rather than saying that lecturing is bad as an

instructional technique, this skill tries to consider when it is effective to lecture and how to lecture effectively.

13. Use of Examples. The use of examples is basic to good, sound, clear teaching. Examples are necessary to clarify, verify, or substantiate concepts. Both inductive and deductive uses of examples can be used effectively by the teacher. Effective use of examples includes starting with simple examples relevant to students' experience and knowledge; relating the examples to the principles or ideas being taught; checking to see if the objectives of the lesson have been achieved by asking students to give examples which illustrate the main point; using analogies and metaphors to relate the unknown with the known or to liven up the examples.

14. Planned Repetition. The purpose of this skill is to clarify and reinforce major ideas, key words, principles, and concepts in a lecture or discussion. The use of planned repetition is a powerful technique in focusing and highlighting important points and in describing them from different points of view. Improper use of this skill can cause confusion and poor learning among students, while proper use can direct their attention to points which the teacher wishes to emphasize. The skill focuses on techniques of literal repetition--simple repetition, spaced repetition, cumulative repetition, and massed repetition.

15. Completeness of Communication. Although the importance of and need for clear communication are blatant, clarity is not often the guiding principle in actual communication. Sensitivity training on the importance, and the difficulty, of being understood is the focus of this skill. A classroom game has been devised which dramatically demonstrates to teachers that what they consider to be clear instructions are often not clear at all to the students. Sensitivity training in the skill of communicating with others will hopefully produce teachers who are more responsive to possible miscommunication.

Annotated Bibliography

Ashlock, R. B. "Microteaching in an Elementary Science Methods Course." School Science and Mathematics 68: 52-57; January 1968.

This article deals with an adaptation of microteaching to an off-campus in-service elementary school science methods course using peers who role played students.

Aubertine, Horace E. "The Use of Microteaching in Training Supervising Teachers." High School Journal 51: 99-106; November 1967.

"Would continuity in the teacher-training process be improved if supervising teachers were trained through microteaching sessions?" This was the major question raised by this article. Conducted at Whitman College in Walla Walla, Washington, the study concluded that the training received by the clinical supervisors transferred to their classroom instruction.

Bell, Camille. A Report of an Investigation of Microteaching in the Development of Teaching Performance in Home Economics Education at Texas Technological College. Lubbock: School of Home Economics, Texas Technological College, August 1968.

This was a report on an experimental study testing six hypotheses related to teaching skill acquisition and interrater reliability.

Belt, Dwayne, and Hugh Baird. "Microteaching in the Training of Teachers: Progress and Problems." Television and Related Media in Teacher Education. Baltimore, Md.: Multi-State Teacher Education Project, August 1967. pp. 20-22.

This is a discussion of microteaching's uses and problems, with particular reference to the authors' experience at Brigham Young University.

---, and Clark Webb. "The Student Teacher Looks at Himself." Utah Educational Review 61: 18-19, 31-32; September-October 1967.

This report describes microteaching training procedures for 200 elementary and secondary trainees at Brigham Young University. The general conclusion is that microteaching procedures do not result in atypical teaching performances or defensive reactions to the presence of peers, equipment, or playback observations.

Berliner, David C. "Microteaching and Technical Skills Approach to Teacher Training." Stanford, Calif.: Stanford Center for Research and Development in Teaching. (In press.)

This paper reviews the history and current state of research and development of microteaching and technical skills training as related to the Stanford University program. Suggestions for future work are also included.

Borg, Walter. "The Minicourse as a Vehicle for Changing Teacher Behavior, the Research Evidence." Paper presented at the American Educational Research Association (AERA) meeting, Far West Laboratory for Educational Research and Development, Berkeley, Calif., February 1969.

This report deals with an experiment using in-service teachers and focusing on the acquisition of specific teaching skills. The report indicates that the minicourse (self-contained instructional procedure using microteaching and videotape recordings) was successful in obtaining significant behavior changes on 10 of the 12 skills taught.

---, and others. "The Minicourse: Rationale and Uses in the In-Service Education of Teachers." Berkeley, Calif.: Far West Laboratory for Educational Research and Development, February 1968. ED 024 647. EDRS Price: MF-$0.25; HC-$1.50.

This article discusses an adaptation of the microteaching approach to an in-service training program called the minicourse. One major difference between the minicourse and the microteaching format is that the minicourse provides a self-contained package of in-service training materials that can be used where videotape recording systems are available.

---, and others. "Video-Tape Feedback and Microteaching in a Teacher Training Model." Far West Laboratory for Educational Research and Development, University of Utah, and San Jose State College, December 1968. (Mimeo.)

The goals of this study were to determine the effectiveness of the minicourse model in changing student teacher behavior and to estimate the effects of the microteaching format and use of videotape feedback within the model. Results of the study indicated that the treatment groups that did not receive videotape feedback and did not practice in the microteaching format were not significantly different than groups that did, with regard to the emphasized teaching behaviors.

Bush, Robert N. "Micro-teaching: Controlled Practice in the Training of Teachers." Communication 48: 201-07; July 1966.

This article reports a comparison between standard observation and teacher aide experiences and the microteaching experiences for two different groups of intern teachers enrolled in the Stanford University Secondary Education Program. Findings of the clinical experimentation showed that the candidates who received microteaching training performed at a higher level of teaching competence than a similar, traditionally taught group. It was also found that performance in the microteaching situation accurately predicted subsequent classroom performance.

Childs, John. "The Use of Videotape Recording in Teacher Education." Television and Related Media in Teacher Education. Baltimore, Md.: Multi-State Teacher Education Project, August 1967. pp. 25-26.

This is a report of the videotape uses at Wayne State, including its use in microteaching.

Cook, F. S., and D. P. Brown. "Does Microteaching Have a Place in Business Education?" Business Education World 48: 7-9, 28-30; April 1968.

This article is a report of microteaching experiences in business education conducted at Wayne State University. Using identifiable skills that were adapted from the general performance curriculum developed at Stanford University, the article cites a number of advantages and disadvantages of the microteaching concept as implemented in the business education program.

---. "Does Microteaching Have a Place in Business Education?" Business Education World 48: 14-16, 31-32, 38-39; May 1968.

This article cites a written chronology for the development of microteaching and videotaped programs at Wayne State University.

Cooper, James M. "Developing Specific Teaching Skills Through Microteaching." High School Journal 51: 80-85; November 1967.

This article emphasizes the development of specific skills in teaching; the establishment of training protocols in order to develop the teaching skills; the employment of the teach-reteach concept in order to incorporate feedback into the teaching act; and the development of specific evaluative instruments in order to measure the skills practiced in the microteaching setting.

Davis, O. L., Jr., and B. R. Smoot. "Effects on the Verbal Teaching Behaviors of Beginning Secondary Teacher Candidates' Participation in a Program of Laboratory Teaching." Paper presented at AERA meeting, University of Texas, Austin, February 1969.

Using a modified version of microteaching, i.e., pupils were peers, but were not role playing, trainees received training in a program of laboratory teaching. The experiment was successful in changing trainees' verbal behavior from convergent questions to divergent and probing. The trainees informed less, clarified more, and uttered fewer procedural-nonsubstantive units than before training.

Dugas, D. G. "Micro-Teaching: A Promising Medium for Teacher Retraining." Modern Language Journal 51: 161-66; March 1968.

This article is a report of a 1966 NDEA Institute for Advanced Studies in French at The University of Michigan, which used a standard format of microteaching. The article concludes that microteaching is helpful in retraining experienced teachers and valuable for keeping records of teaching.

Fortune, Jim C. "Toward a Research Strategy To Investigate Attributes of Teacher Behavior." High School Journal 51: 93-105; November 1967.

This article emphasizes the research strategy that has grown out of the microteaching format utilizing a videotape recording of teaching encounters to gain a repeatable analysis of classroom practices. The strategy involves focusing upon a specific teaching behavior directed toward the accomplishment of a specific classroom goal, videotaping several instances of this teacher behavior, assessing student levels of goal acquisition, and then isolating instances of the behavior that result in minimum and maximum goal attainment on the part of the students. By repeating this strategy, Fortune asserts that relationships between specific teaching behaviors and acquisition of goal achievement on the part of students can be subjected to several formats of logical, philosophical, and statistical analysis.

---, James M. Cooper, and Dwight W. Allen. "The Stanford Summer Microteaching Clinic, 1965." Journal of Teacher Education 18: 384-93; Winter 1967.

This article presents a review of the Stanford Microteaching Clinic, 1965, including the organization and sequence of skills presented during that clinic, description of the structure and format of the clinic, and an analysis of its accomplishments.

Foster, F. G. "Microteaching." Arizona Teacher, May 1967. pp. 12-13.

This article reports the use of videotapes in a microteaching setting in order to analyze specific teaching techniques in the first viewing, to concentrate on the content presentation in the second viewing, and to focus on pupil-teacher interaction in the third viewing.

Gage, N. L. "An Analytical Approach to Research on Instructional Methods." Phi Delta Kappan 49: 601-06; June 1968. ED 011 936. EDRS Price: MF-$0.25; HC-$0.90.

In this article Gage describes some of the research he is conducting on teaching skills and their effect on students' learning and perceptions of the lesson.

Gibson, James W. "Using Videotape in the Training of Teachers." Speech Teacher 17: 107-09; March 1968.

Using a microteaching approach, the author reports how microteaching and videotaping can be used in a speech methods course.

Goodkind, Thomas B. "An Evaluation of Effectiveness of the Microteaching Technique in the Training of Elementary School Teachers." Paper presented at AERA meeting, University of Connecticut, Storrs, February 1968.

This is a report on an experimental study conducted at The University of Connecticut which indicated that teachers who had microteaching training with their lessons videotaped displayed more insight into their teaching and a greater awareness of personal habits than teachers who did not have videotapes made of their microteaching lessons.

Ivey, Allen E., and others. "Microcounseling and Attending Behavior: An Approach to Practicum Counselor Training." Counseling Psychology 15: 5; 1-12; 1968. Supplement.

Micro-counseling is a video method of training couselors in basic skills of counseling within a short period of time. This research studies the effects of micro-counseling training procedures upon three groups of beginning counselors. Three different skills, "attending behavior," "reflection of feeling," and "summarization of feeling," were the focus of research. These studies suggest that attending behavior and its related concepts may be described in behavioral terms meaningful to beginning counselors. Implications of the attending behavior and micro-counseling frameworks are discussed.

Johnson, James A. "What's New in Teacher Education." Illinois Education. April 1968. pp. 328-30.

This article gives a general overview of what microteaching is as well as a brief description of the Stanford model.

Johnson, William D. "Microteaching: A Medium in Which To Study Teaching." High School Journal 51: 86-92; November 1967.

This article emphasizes the appropriateness of microteaching as an intermediate research environment located between the conceptualization of a methodological innovation and the complexities of the field study. The Teaching Techniques Laboratory, located at the University of Illinois, is also described. In conclusion, the author asserts that microteaching has proven useful for the improvement of instruction both as an environment where teachers may gain skill and as an environment where methods or teaching techniques may be systematically investigated and improved.

Kallenbach, Warren. "Microteaching as a Teaching Methodology." Berkeley, Calif.: Conference on Instructional Methods and Teacher Behavior, Far West Laboratory for Educational Research and Development, 1966. ED 013 791. EDRS Price: MF-$0.25; HC-$0.40.

This article is a general overview history of microteaching, including a brief account of Stanford's Secondary Teacher Education Program, the application of microteaching to elementary intern teachers at San Jose State College, and a review of some of the research related to microteaching.

---, and Meredith D. Gall. "The Comparative Effects of Microteaching and a Conventional Training Program on the Classroom Performance of Elementary Intern Teachers." Journal of Educational Research. (In press.)

This study compares the effectiveness of elementary school interns trained in a summer microteaching program with interns who received conventional classroom observation and student-teaching experience. Microteaching was not found to result in significantly higher ratings of teacher effectiveness either immediately after or a year after training. However, it was concluded that microteaching is an effective training strategy since it achieved similar results when compared with conventional methods, but in only one-fifth the time and with fewer administrative problems.

Kuhn, Wolfgang. "Microteaching: Holding a Monitor Up to Life." Music Educator's Journal 55: 49-53; December 1968.

This article describes the training of music interns in the Stanford Teacher Education Program.

Langer, Philip. "Minicourse: Theory and Strategy." Paper presented at AERA meeting, Far West Laboratory for Educational Research and Development, Berkeley, Calif., February 1969.

In this article a good description is given of the minicourse concept, including some sample instructional materials used in one minicourse.

Mayhugh, S. L. "Microteaching: A Major Component of the Pre-Service Program." Contemporary Education 39: 206-09; March 1968.

Analysis sessions at Indiana State University were aimed at developing alternative teaching strategies rather than evaluating good and bad behaviors. An analysis of these behaviors was conducted through a broad spectrum of instruments such as the Teacher Classroom Activity Profile, Secondary Student Teacher Performance Profile, Withall's Social-Emotional Climate Index, Crispin's System and Interaction Analysis, and Mayhugh's Teacher-Counselor Interaction Analysis System.

McDonald, F. J., and D. W. Allen. Training Effects of Feedback and Modeling Procedures on Teaching Performance. Stanford, Calif.: School of Education, Stanford University, 1967.

This report describes a series of three experiments to assess the use of television recordings to improve teaching performance. In particular, the experiments investigate the effects of self-feedback and reinforcement on the acquisition of a teaching skill, the effects of feedback and practice conditions on the acquisition of a teaching strategy, and the effects of modeling and feedback variables on the acquisition of a complex teaching strategy.

McGuerry, Lawrence. "Microrehearsal." Music Educator's Journal 55: 49-53; December 1968.

Conducted at the University of the Pacific, this study describes how teaching skills were adapted from the Stanford technical skills of teaching to a music rehearsal. Included were such skills as training in set, in effective use of the voice in giving clear directions, in closure, in stimulus variation, and in establishing appropriate frames of reference.

McKitrick, M. O. "Videotaped Microteaching for Preparing Shorthand Teachers." Journal of Business Education 43: 285-86; April 1968.

This article reports microteaching experiences at Western Michigan University designed to develop practice in teaching for shorthand teachers.

Meier, John H. "Long Distance Microteaching." Educational Television, Vol. 20. November 1968.

This article describes the application of a combination of new media to a six-month training program for a group of persons scattered throughout the United States. Trainees were recorded on videotapes which were sent back to the Greeley, Colorado, Training Center where a staff member reviewed and prepared a critique using the same instrument as the trainees. These critiques were returned to the trainee with the videotape so that the latter could be reviewed in a critique read simultaneously.

---. "Rationale for and Application of Microtraining To Improve Teaching." Journal of Teacher Education, Summer 1968. pp. 145-57.

This article relates several common learning theories to the microteaching process of subjecting samples of human behavior to videotape recording, reviewing, responding, refining, and redoing (five r's). A number of applications of microteaching are cited in the article, including in-service application conducted by the Jefferson County School District in Colorado and studies conducted by the Child Study Institute at Colorado State College.

---, and Gerald Brudenell. "Remote Training of Early Childhood Educators." Report of a Title XI Institute of the National Defense Education Act. Greeley: Colorado State College, July 1968. ED 027 062. EDRS Price: MF-$0.25; HC-$2.30.

Microteaching is included in this report as one of the procedures used to train teachers in their home schools. The authors report on a novel in-service teacher-training model which was used for teachers widely distributed over several states.

Microteaching: A Description. Stanford, Calif.: School of Education, Stanford University, 1966. ED 019 224. EDRS Price: MF-$0.75; HC-$6.50.

This booklet is a compilation of articles and reports relating to the microteaching activities at Stanford University, including reports of the 1965 and 1966 microteaching clinics.

"Microteaching in Student Teacher Laboratory: University of Illinois." School and Society 96: 128-30; March 2, 1968.

This article is a brief description of an in-service program for instructors in the teacher preparation program.

Minnis, Douglas L. "Micro-teaching Interaction Analyis in a Teacher Education Curriculum." Davis: University of California, February 1968. (Unpublished.)

This paper is a description of attempts at the University of California, Davis, to incorporate microteaching and interaction analysis into the curriculum of the preservice and in-service teacher education programs.

Perlberg, Arye, and David C. O'Bryant. "The Use of Video-Tape Recording and Micro-Teaching Techniques To Improve Instruction on the Higher Education Level." Urbana: College of Engineering, University of Illinois, August 1968. ED 023 314. EDRS Price: MF-$0.25; HC-$2.05.

This report describes a study conducted at the University of Illinois utilizing videotape recorders and microteaching for the improvement of college instructors. The techniques employed resulted in favorable attitudinal responses by the participants.

---, R. Tinkham, and R. Nelson. "The Use of Videotape Recorders and Microteaching Techniques To Improve Instruction in Vocational-Technical Programs in Illinois." Urbana: College of Education, University of Illinois, 1968. (Mimeo.) ED 022 029. EDRS Price: MF-$0.25; HC-$1.30 .

This is a report of a pilot program conducted at the University of Illinois, Urbana, to augment the methods courses with microteaching laboratory experiences in order to ease anxieties about student teaching.

Schaefer, M., and M. H. Stromquist. "Microteaching at Eastern Illinois University." Audiovisual Instruction 12: 1064-1065; December 1967.

This article discusses microteaching experiences at Eastern Illinois University including students with majors in men's physical education, mathematics, shorthand, life science, and home economics. There was no focus on any particular technical skills of teaching.

Sedgwick, L. K., and H. T. Misfelt. "Microteaching: New Tool for a New Program." Industrial Arts and Vocational Education 56: 34-35; June 1967.

This article is a description of a pilot teacher education program in vocational education and industrial arts at Stout State University in Wisconsin.

Van Mondrans, A. P., and others. "Student Attitudes and Achievement in an Educational Psychology Course After Microteaching." Paper presented at AERA meeting, Purdue University, February 1969. ED 028 994. EDRS Price: MF-$0.25; HC-$0.80.

The purpose of this study was to assess the effects of microteaching experiences on the attitudes and achievements of students in an undergraduate educational psychology course. Of special interest was the question concerning what effect the experience in an educational psychology course would have on student perceptions regarding the relevance of educational psychology to teaching.

Ward, Blaine. Personal communication regarding a nationwide survey. Vermillion, S. Dak., 1969.

This is a very comprehensive survey of all NCATE institutions regarding usage of microteaching. This communication will be part of Mr. Ward's dissertation at The University of South Dakota.

Webb, Clark, and Hugh Baird. "Selected Research on Micro-Teaching." Television and Related Media in Teacher Education. Baltimore, Md.: Multi-State Teacher Education Project, August 1967. pp. 27-31.

This paper is a brief summary of selected research related to microteaching at three institutions (Stanford University, Hunter College, and Brigham Young University).

---, and others. "Description of a Large-Scale Micro-Teaching Program." Paper presented at the Department of Audiovisual Instruction convention, Provo, Utah, March 25, 1968. ED 027 250. EDRS Price: MF-$0.25; HC-$0.60.

This article describes the use of microteaching at Brigham Young University utilizing a 30-minute microteaching session in which peers rather than actual secondary and elementary students were used. The article reports that student reactions to the microteaching experience were very positive.

Young, David B. "The Modification of Teacher Behavior Using Audio Video-Taped Models in a Micro-Teaching Sequence." Educational Leadership January 1969. pp. 394-95, 397, 399, 401, 403.

This article reviews the theoretical rationale and research regarding the use of videotape models in the acquistion of a teaching skill.

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